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A.D. 1848 . . . . . N° 12,263.

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S P E C I F I C A T I O N

OF

WILLIAM EDWARD HOLLANDS  
AND  
NICHOLAS WHITAKER GREENE.

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MANUFACTURE OF ARTIFICIAL FUEL  
IN BLOCKS.

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L O N D O N :

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HOLLANDS AND GREENE'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, we, WILLIAM EDWARD HOLLANDS, of Regents Quadrant, in the County of Middlesex, Dentist, and NICHOLAS WHITAKER GREENE, of Walton Place, Chelsea, in the County of Middlesex, Gentleman, send greeting.

5    WHEREAS Her present most Excellent Majesty Queen Victoria, by Her Royal Letters Patent under the Great Seal of the United Kingdom of Great Britain and Ireland, bearing date at Westminster, the Fourth day of September, One thousand eight hundred and forty-eight, in the twelfth year of Her reign, did, for Herself, Her heirs and successors, give and grant unto us, the  
10 said William Edward Hollands and Nicholas Whitaker Greene, our exors, admors, and assigns, Her especial licence, full power, sole privilege and authority, that we, the said William Edward Hollands and Nicholas Whitaker Greene, our exors, admors, and assigns, and such others as we, the said William Edward Hollands and Nicholas Whitaker Greene, our exors, admors, or assigns,  
15 should at any time agree with, and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick-upon-Tweed, our Invention of “A NEW MANUFACTURE OF ARTIFICIAL FUEL IN BLOCKS OR LUMPS;” in which said Letters Patent is contained a proviso that  
20 we, the said William Edward Hollands and Nicholas Whitaker Greene, or



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one of us, should cause a particular description of the nature of our said Invention, and the manner in which the same is to be performed, by an instrument in writing under our hands and seals, or under the hand and seal of one of us, to be inrolled in Her said Majesty's High Court of Chancery within four calendar months next and immediately after the date of the 5 said in part recited Letters Patent, as in and by the same, reference being thereunto had, will more fully and at large appear.

**NOW KNOW YE**, that in compliance with the said proviso, we, the said William Edward Hollands and Nicholas Whitaker Greene, do hereby declare that the nature of our said Invention, and the manner in which the same 10 is to be performed, are fully described and ascertained in and by the following statement thereof, that is to say :—

Our Invention consists of employing plaster of Paris and caustic cements with water to combine small coal, with or without other materials, into blocks or lumps, thus producing a new manufacture of artificial fuel. And our 15 Invention also consists of causing artificial fuel, which is liable to become friable or decrepitate when exposed to the atmosphere, to be coated with oil. And in order that our Invention may be most fully understood and readily carried into effect, we will proceed to describe the means pursued by us; and we would state that the cementing matters we prefer to employ are gypsum 20 and calcined lime with water, in such quantity that the caustic cementing matter of the lime, and the well-known hardening character of the gypsum, will when combined with the water set and crystallize, and hold the small coal into concrete blocks or lumps. We would, however, remark that Roman cement or calcined river or sea mud may be used with water, but not, we 25 believe, with such advantage as when using gypsum and caustic lime. The manner in which we combine the small coal with or without other materials is to mix the small coal with the gypsum and lime, and then apply the water in like manner to making concrete for building purposes, the difference being that small coal is used in place of sand and gravel, and having well mixed 30 these matters, we put the same into moulds and subject the same to pressure, and then drying, as has heretofore been practised when making artificial fuel, and although the simple combining of small coal or slack with the cementing matter or matters makes most useful fuel, we have found that for special purposes, and to produce an artificial fuel according to our 35 Invention, it is desirable to mix with them other ingredients. Thus supposing we wish to obtain a very quickly lighting fuel, a small quantity of nitrate of soda or potash, or other similar salts containing large quantities of oxygen, such as the chlorate and chromate of potash, being added, causes this effect;



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to get blocks or lumps of fuel to burn comparatively slow, we have found it desirable to add a small quantity of alum, which also has other advantages in the fuel; and we have found that the use of small quantities of common or rock salt is also advantageous in obtaining fuel which burns clear and  
5 bright. We have found that a fuel composed of one hundred and forty parts by weight of calcined gypsum ground fine, seventeen parts of caustic lime, seventeen parts of ground alum, seventeen parts common or rock salt, twenty-eight parts of aluminous clay, two thousand two hundred and forty parts of small coal, makes an admirable fuel for steam boiler purposes, the  
10 blocks or lumps when burning not being liable to become broken or friable. The clay may be left out, but in such cases we prefer to increase the cements above mentioned, and when for a quick lighting fuel, we leave out the alum and apply nitrate of potash or soda.

Having thus described the nature of our Invention, and the manner in which  
15 the same is to be performed, we would remark that we are aware that gypsum and lime have before been employed with small coal in the manufacture of artificial fuel, and such is the case with the other matters herein mentioned. We therefore wish it to be understood that we make no claim generally to the application of either of the above-mentioned ingredients,  
20 separately or combined, in the manufacture of artificial fuel. And we would also state that when gypsum or lime has heretofore been used with small coal, the same has not been employed in the state and with such a quantity of water as would cause it to crystallize, and with the small coal make a concrete mass. Heretofore when using lime or gypsum with small  
25 coal, persons have had recourse to the employment of considerable quantities of resinous or bituminous matters as the cementing materials. Some artificial fuels, particularly such as are composed of small coal, with clay and other matters not offering strong holding or cementing properties are liable to decrepitate and become friable when exposed for a time to moisture and air.  
30 And we have found that by coating lumps or blocks of such fuel with oil, that the moisture will be excluded and the lumps or blocks will retain their substance and figure; for this purpose we prefer to use boiled linseed oil, though other oils may be used, preferring those which are rendered drying, and the lumps or blocks of fuel may be coated therewith, either by simply  
35 immersing in and removing them from the oil, or by applying the oil by a brush. We would wish it to be understood that it is the using of gypsum, caustic lime, or the other cements mentioned with water, to produce concrete blocks or lumps of small coal, with or without other matters, as an artificial fuel, as above described, which constitutes the peculiar character of our



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Invention. And we also claim the coating of artificial fuel with oil as above described.

In witness whereof, we, the said William Edward Hollands and Nicholas Whitaker Greene, have hereunto set our hands and seals, this Fourth day of January, One thousand eight hundred and forty-nine. 5

WILLIAM EDWARD (L.S.) HOLLANDS.  
NICHOLAS WHITAKER (L.S.) GREENE.

ANDERSON.

AND BE IT REMEMBERED, that on the Fourth day of January, in the year of our Lord 1849, the aforesaid William Edward Hollands and Nicholas Whitaker Greene, came before our said Lady the Queen in Her Chancery, 10 and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose.

Enrolled the Fourth day of January, in the year of our Lord One 15 thousand eight hundred and forty-nine.

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LONDON:

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